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ABSTRACT

The efforts of two pilot accelerated schools serving poor and minority students are evaluated in this report. A program goal was to integrate improvement at the school and community levels. Section 1 briefly describes the attitudes and meanings predominant in schools serving poor and minority youth. The focus on the individual, a narrow view of learning, and the hierarchical school structure is attributed to the technological mindset of American education. Section 2 applies the philosophy of John Dewey to create an alternative understanding of schooling as a collective, humanistic process of creating knowledge through practice and reflection. The third section shows how a process of inquiry based on the Deweyan values of participation, communication, reflection, and experimentation can transform school meanings and beliefs. The implementation of the inquiry process in two pilot schools is described in section 4. The final section discusses behavioral and attitudinal changes and continuing challenges to educational innovation. Extensive references are included in footnote format. (LMI)

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The Inquiry Process in the Accelerated School: A Deweyan Approach to School Renewal

Paper Presented at AERA
April, 1990

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INTRODUCTION

School renewal tends to be an eclectic affair. Superintendent X attends a conference where she hears reports of substantial gains associated with a computer assisted program for remedial reading; she arranges with the program developers to conduct workshops for her staff. A principal in the district finds reports of a successful peer tutoring program in his professional journal; he instructs his third and fourth grade teachers to attend a training session and implement the program. A second grade teacher listens to a colleague from a nearby district tout the remarkable effects of a new basic math curriculum; she purchases the program's teacher manual and manipulative kit. Struggling to improve upon present practice, committed educators draw upon any and all promising models and add them on to the existing structure of their schools.

But amidst the influx of new and diverse programs, educators often fail to address the underlying culture—the attitudes, meanings, and beliefs—of schooling. Writers such as Seymore Sarason have commented upon the relative constancy of school culture over time and the resiliency of this culture in the face of attempts to change practice.[1] This relationship between changing practice and constant beliefs helps to explain the paradox of reform articulated by Larry Cuban. "How can it be...," wonders Cuban, " that so much school reform has taken place over the last century yet schooling appears to be pretty much the same as it has always been?"[2] The answer to Cuban's question, and the key to eliciting lasting and meaningful change in the schools, lies in the inextricable connection between educational practice and the school culture in which these practices come to life. Changes in practice thus must be understood in light of deeper transformations in attitudes, meanings, and beliefs.

Over the last three years, our collaborative work with two pilot Accelerated Schools has been informed by our interest in changing both the practices and the cultures of schools serving poor and minority students. On one level, we have sought to bring together, under the umbrella of individual school sites, the many practices that have been articulated in this volume: instruction which is cooperative, active, and involves discovery; curriculum

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[1] Seymore Sarason, *The Culture of the School and the Problem of Change*

[2] Larry Cuban. "A Fundamental Puzzle of School Reform" *Phi Delta Kappan* v69 n5, 1988, p. 341.

which draws upon high content and higher order thinking skills; and school structures which call for greater parental involvement as well as participatory governance. On a deeper level, we have attempted to facilitate a transformation of the basic attitudes which characterize the school communities. Confronting a view of schooling concerned primarily with limits—of the learner, the teacher, and the community—we have encouraged an "accelerated" vision which focuses on the possible.

This chapter chronicles the efforts of the Accelerated Schools Project to develop this new vision of schooling. Section One briefly surveys the attitudes and meanings which predominate in schools serving poor and minority youth. We ascribe the focus on the individual, the narrow view of learning, and the hierarchical structure of schools to the prevalence of the technocratic mindset within American education. In Section Two, we draw upon the rich legacy of John Dewey to outline an alternative understanding of schooling as a collective process of creating knowledge through practice and reflection. We suggest that this humanistic understanding of schooling has clear and practical implications for the roles of students and teachers which hold particular relevance to the needs of poor and minority children. Section Three raises the question of how meanings and beliefs can be transformed within schools. The answer we sketch—a process of collective inquiry—points back to the Deweyan values of participation, communication, reflection, and experimentation which we outline in Section Two. We then share a detailed description of our own experience facilitating this process of inquiry at our pilot Accelerated Schools in Section Four. This description is followed by a report on interim effects in Section Five which comments upon both changes in practice and in attitudes and beliefs. The chapter concludes with a discussion of continuing challenges to change.

I. THE TECHNOCRATIC MODEL OF SCHOOLING

The spate of educational reports issued in the early eighties provides a vivid picture of the practices commonly found within American schools. In separate studies of American education, Goodlad and Sizer each describe a system of schooling generally characterized by a lack of intellectual rigor or

excitement, uninspired teachers and students, and paralyzing bureaucracies.[3] Their studies point to the pervasiveness of an understanding of schooling which views teachers as technicians who implement narrow models of learning created by outside experts.[4] This technocratic vision provides for a whole system of attitudes, meanings, and beliefs which underlie the practices found in most contemporary American schools. While this vision is common throughout the educational system, it is particularly prevalent and its effects particularly damaging within inner city and poor rural schools. As Goodlad and Oakes argue, "most educationally impoverished programs are offered disproportionately to poor and minority students."[5] Any effort to improve upon these programs must begin with an understanding of the mindset which gives life to these practices.

Elliot Eisner traces the sources of the technocratic mindset to the psychology of Thorndike and the organizational theory of Taylor. Searching for a standard curriculum in the early part of this century, teachers' colleges turned to Thorndike whose work suggested a science of teaching. Thorndike based his science of teaching upon the belief that " [o]ne was able to transfer what one had learned only insofar as the elements in one situation were identical with those in the next."[6] This belief views schooling much like a controlled experiment in which the teacher-technician brings some scientifically determined and generalizable technique to bear upon the student-subject. Several corollary assumptions about teaching and learning fall out of the technocratic vision of schooling. First, because it separates the production from the dissemination of knowledge, the technocratic vision assumes that the teacher will follow rules of behavior established by outside experts. Second, because the technocratic vision assumes a controllable process, it implies modes of instruction which tend to limit the range of possible responses from

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[3] John Goodlad. *A Place Called School* New York: McGraw-Hill Book Company, 1984. Theodore Sizer. *Horace's Compromise: The Dilemma of the American High School* Boston: Houghton Mifflin Company, 1985.

[4] The term "technocratic" is used by a number of contemporary commentators. See for example: Richard Gibboney & John Gould. "Staff Development and Educational Renewal Through Dialogue in Two School Systems: A Conceptual and Empirical Assessment" *Educational Resources Information Center (ERIC)* 1987; and Eisner, Elliot. "The Art and Craft of Teaching" *Educational Leadership* v40 n4 1983.

[5] John Goodlad and Jeanie Oakes. "We Must Offer Equal Access to Knowledge" *Educational Leadership* v45 n5 1988, p. 19.

[6] Eisner, Elliot. "The Art and Craft of Teaching" *Educational Leadership* v. 40 n.4 1983, p. 6.

the students. We expect teacher-centered instruction, highly scripted lessons, and questions which have one clear answer to arise within this view of schooling. Third, because of its concern with generalizability, the technocratic vision assumes that curriculum should be the same across settings. Little, if any, connection is made between "school knowledge" and the knowledge which students have of their own unique lives within their surrounding community. Furthermore, this vision of schooling leads students to view knowledge as something created somewhere else rather than something which they can recreate and make use of in their everyday lives.

While Thorndike's psychology provides a vision of the individual and the schooling process, Taylor's scientific management offers a complimentary view of the school and the organizational bureaucracy. Originally concerned with bringing science to the industrial workplace, Taylor employed time and motion studies to determine the optimal way to produce outputs given a fixed set of inputs. Educational administrators appropriated Taylor's methods for making factories more efficient, rational places and applied them to the schools.

> School administrators embraced scientific management as a way to reduce their vulnerability to public criticism and to make schools more efficient...Teachers were regarded as workers to be supervised by specialists who made sure that goals were being attained[.][7]

Like Thorndike's psychology, this model of management continues to influence contemporary educational practice. It implies a hierarchical governance structure in which goals and practices are clearly defined by those at the top of the hierarchy for those at the bottom. Within this hierarchy, school administrators frequently communicate through directives; teachers commonly act upon rules and routines.

Such a vision of schooling appears to promise a more efficient and productive system—one in which experts can create instructional packages which teachers can then successfully implement in all settings. But,Thorndike's science of teaching and Taylor's scientific management lead to practices which undermine the creativity, interest, and development of both students and teachers. The curricular approach and instructional methods implied by the technocratic vision of schooling—subject matter detached from student interests

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[7] Ibid. p. 7.

and first hand knowledge, teacher-centered instruction, rote exercises— are precisely those which commentators such as Goodlad and Sizer associate with apathetic, passive, and unintellectual students.[8] Goodlad and Sizer similarly have joined a whole host of critics who point to the relationship between Taylorism's top-down authority and teachers who lack energy and intellectual excitement. One-time Dean of Teachers College Columbia, Robert Schaeffer, summarizes this critique forcefully : " [w]hat seems most enervating about teaching in the lower schools is not the severity of the difficulties encountered but the relative powerlessness of the individual to further his effectiveness."[9]

While the deadening effects of the technocratic mindset can be found throughout the educational system, they are particularly prevalent in schools serving poor and minority children. In this volume, Henry Levin argues that at-risk students are more likely than their middle class counterparts to receive remedial instruction characterized by a focus on mechanics and repetition.[10] Michelle Fine states this point succinctly in a recent article on the drop-out problem: "*Smart kids* get to participate; *remedial kids* get to memorize."[11] Jean Anyon provides a more systematic defense for this claim in her classic study comparing pedagogical beliefs and instructional practices within schools serving either working class, middle class, or upper class students. Anyon found that while students attending school in an upper middle class community believed that knowledge comes "from your head" and that "you make it in your brain[,]" students in the working class schools thought that knowledge came from outside their own lives—from books, or the teacher, or the Board of Education.[12] In a related study, Anyon found that instruction in the working class settings tended to fit the technocratic model's emphasis on routine and control.

> In the two working-class schools, work is following the steps of a procedure. The procedure is usually mechanical, involving rote behavior and very little decision making or choice. The teachers

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8 Levin, in this volume, paints a similar picture of the deadening effects of prevailing pedagogical practice on the motivation and expectations of at-risk youth.

9 Shaeffer, Robert *The School as a Center of Inquiry* p. 59.

10 Henry Levin. "Don't Remediate, Accelerate" in this volume.

11 Michelle Fine, "Deinstitutionalizing Educational Inequity: Contexts That Constrict and Construct the Lives and Minds of Public-School Adolescents" in *School Success for Students at Risk: Analysis and Recommendations of the Council of Chief State School Officers* San Diego: Harcourt Brace Jovvanovich, 1988. p. 95.

12 Jean Anyon. "Social Class and School Knowledge" *Curriculum Inquiry* v11 n1 1981. p. 21.

> rarely explain why the work is being assigned, how it might connect to other assignments, or what the idea is that lies behind the procedure or gives it ccherence and perhaps meaning or significance.[13]

Working class children, according to Anyon are thus more likely to find themselves acted upon—by knowledge, by assignments, and by the teacher.

In addition, a case can be made that teachers serving poor and minority children likewise tend to be more at the mercy of the system than their colleagues at middle class schools. Larry Cuban addresses this point indirectly in a recent article on the legislature's attempts, in many states, to exert greater control on curriculum and instruction. Higher test scores in most middle class schools, argues Cuban, will provide teachers in those schools with the political capital necessary to resist unwanted intrusions. Teachers in the relatively low scoring inner-city schools, on the other hand, unable to draw upon this political goodwill, will likely be forced to follow the whim of the legislatures.[14]

II. THE HUMANISTIC MODEL OF SCHOOLING

The picture we have drawn of the technocratic mindset points to a system of schooling which views teachers and students mechanistically—they are acted upon by some directive or stimulus and expected to respond in a predictable way. While the technocratic mindset holds great sway over American education, this picture does not fully capture the broader human potential of teachers and students; their "hearts as well as brains," their "human idiosyncrasies as well as their calculable commonalities."[15] Human beings, as Elliot Eisner wisely points out, do not "simply respond to stimuli." They "construe situations ...make sense of classrooms ...[and] anticipate the world in which they live."[16] Or at least this is the way we hope teachers and (eventually) students will act. Eisner's is a vision of the possible very closely aligned with our own "accelerated" vision of schooling which substitutes a humanistic view of

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[13] Jean Anyon. "Social Class and the Hidden Curriculum of Work" *Journal of Education*. v16 n2 1980. p. 73. Levin and Carnoy make a similar case in Martin Carnoy and Henry Levin. *Schooling and Work in the Democratic State* Stanford California: Stanford University Press, 1985. pp. 112-128.

[14] Larry Cuban. "Another Look at Constancy in the Classroom" *Phi Delta Kappan* v68 n1 1986. pp. 8-9.

[15] Sizer. *Horace's Compromise: The Dilemma of the American High School* p. 8.

[16] Eisner. "The Art and Craft of Teaching" p. 9.

teachers and students for a mechanistic one. In outlining a humanistic view, we propose a set of attitudes, meanings, and beliefs about schooling which we hope can serve as a viable alternative to the culture of schooling dominated by a technocratic mindset and which suggest a rich body of educational practices.

Whereas the technocratic view can be traced to Thorndike and Taylor, the origins of the humanistic view of schooling lie clearly in the work of John Dewey. Dewey 's humanism is inextricably tied to his commitment to democracy. "[D]emocracy," Dewey writes, "has always been allied with humanism, with faith in the potentialities of human nature."[17] For Dewey, belief in democracy implies faith in the potential of both children and adults to understand and, to some extent, shape the world around them. Individuals begin to realize this potential, Dewey argues, when, as members of groups, they take active roles in inquiring into shared problems. This process of collaborative inquiry serves as a model for pedagogy as well as for the organization of school governance. It encompasses four interrelated values which will be examined below: participation, communication/community, reflection, and experimentation.

Participation

In The School and Society Dewey tells the story of going from store to store searching for the appropriate desks for the children in his laboratory school. He finally finds a sympathetic furniture salesman who explains why he has had no success. "You want something at which the children may work; these are all for listening."[18] Dewey wishes to replace the passive learner with the active student. Schools, he argues, should engage students in extended projects, in which they can construct, create, and discover. Like the learning activities suggested by Noddings and Greeno in this volume, such projects should draw on the child's natural interests to unleash the motivation and creativity which we normally associate with games children play outside of the school. "The moment the children act they individualize themselves; they cease to be a mass and become the intensely distinctive beings that we are acquainted with out of school[.]"[19] The value of participation should inform what

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[17] John Dewey, *Freedom and Culture*, in John Dewey: The Later Wroks, 1925-1953, Volume 13: 1938-1939 Edited by Jo Ann Boydston. Carbondale, Illinois: Southern Illinois University Press, 1988 p. 152.

[18] John Dewey, *School and Society*, Chicago: University of Chicago Press, 1956. p. 31.

[19] Ibid. P. 33.

children learn as well as how they learn. Dewey believes that curriculum needs to have an "organic connection" with what the student has already felt or seen. It must be related to the unique experiences and interests of the children within a school ; clearly it cannot be created by some outsider, no matter her expertise.

For Dewey, development of curriculum and other decisions about instruction, school organization, and educational philosophy should be the domain of teachers, working together at the school site. While Dewey acknowledges that decisions should be placed in the hands of experts, he argues that the expert is not some highly placed official in the central hierarchy, but "every member of the school system." The remedy for problems within the system "is not to have one expert dictating educational methods and subject-matter to a body of passive, recipient teachers, but the adoption of intellectual initiative, discussion, and decision throughout the entire school corps."[20] Dewey believes that the wide participation of teachers in school decision making leads to the development of greater commitment to school practices and goals, richer understanding of the teaching craft, and ultimately more informed and better teaching practices. Teachers should actively consider not just how to achieve certain ends, but should as well play a role in determining the nature of these ends. "Until educators get the independence and courage to insist that educational aims are to be formed as well as executed within the educative process, they will not come to consciousness of their own function."[21]

Dewey's commitment to school site decision making implies the corollary importance of giving parents and other members of the surrounding community a voice in determining the goals and practices of the school. Dewey believes staunchly in the importance of citizen participation in local affairs. "Democracy must begin at home, and its home is the neighborly community."[22] In addition to recognizing a role for parents in school governance, Dewey also envisions the value of actively engaging parents socially in the life of the school. In an essay entitled, "The School as a Social Centre." Dewey advocates creating

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[20] John Dewey. "Democracy in Education" in *Education Today* edited with forward by Joseph Ratner. New York: G.P. Putnam's Sons, 1940. p. 65.

[21] John Dewey. *Sources of a Science of Education* in John Dewey: The Later Wroks, 1925-1953 volume 5: 1929-1930. Edited by Jo Ann Boydston. Carbondale, Illinois: Southern Illinois University Press, 1984. p. 38.

[22] John Dewey. *The Public and Its Problems*, in John Dewey: The Later Wroks, 1925-1953 volume 2: 1925-1927. Edited by Jo Ann Boydston. Carbondale Illinois: Southern Illinois University Press, 1984. p.368.

recreational, social, and intellectual activities for parents within the schools.[23] This essay anticipates many of the arguments for parental involvement included in the chapter by Epstein and Scott-Jones contained in this volume.

Communication/Community

Dewey argues that with the transformation from passive recipient to active participant, communication begins to take on new importance.

> Where the school work consists in simply learning lessons, mutual assistance, instead of being the most natural form of co-operation and association, becomes a clandestine effort to relieve one's neighbor of his proper duties. Where active work is going on, all this is changed. Helping others, instead of being a form of charity which impoverishes the recipient, is simply an aid in setting free the powers and furthering the impulse of the one helped. A spirit of free communication, of interchange of ideas, suggestions, results[.][24]

Dewey believes that communication amongst students or teachers can promote richer understanding of a student project or a pedagogical problem in much the same way as communication amongst scientists enables them to learn from one another's experience. Such learning only takes place, however, when two conditions for collaborative inquiry are met. First, before a group of individuals can become a "community of inquirers", open-ended and informal communication must play a role in developing common understandings and a shared sense of purpose. As Dewey notes, "[t]here is more than a verbal tie between the words common, community, and communication."[25] Second, while the community of inquirers will be driven by a common purpose, they must be receptive to unexpected outcomes, a multiplicity of outlooks, and even differences of opinion. These principles of collaborative inquiry and communication point to the merit of cooperative learning programs such as the Program for Complex Instruction described in this volume by Cohen and Arias and to the collaborative governance teams described by Levin.

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23 John Dewey. "The School as a Social Centre" in John Dewey: The Middle Works, 1899-1924 Volume 2, pp. 80-94. Edited by Jo Ann Boydston. Southern Illinois University Press, Carbondale Illinois,

24 Dewey. *School and Society* p. 16.

25 John Dewey, *Democracy and Education* in John Dewey: The Middle Works, 1899-1924 Volume 9: 1916, pp. 80-94. Edited by Jo Ann Boydston. Carbondale Illinois: Southern Illinois University Press, 1985. p. 7.

Reflection

Dewey values reflection for its capacity to enable individuals, acting in concert, to render the world more understandable and hence open to improvement. "A total, unanalyzed world does not lend itself to control; it is equivalent to the subjection of man to what occurs, as if to fate."[26] To analyze the world, to *reflect,* means more than merely memorizing isolated facts. "To know anything we must go beyond what is immediately present, must classify and discriminate."[27] Dewey promotes reflection in his students by engaging them in extended projects which require them to look past that which lies directly before them and draw connections between seemingly separate experiences. In a similar vein, he encourages teachers in his Laboratory School to examine their students' case histories in light of the relationship between specific behaviors and the faculty's more general discussion of different pedagogical approaches. Dewey believes that such reflection encompasses more than a method of examining the world; it also suggests a set of attitudes about inquiry. Reflection implies:

> willingness to hold belief in suspense, ability to doubt until evidence is obtained; willingness to go where evidence points instead of putting first a personally preferred conclusion; ability to hold ideas in solution and use them as hypotheses to be tested instead of as dogmas to be asserted; and (possibly the most distinctive of all) enjoyment of new fields for inquiry and of new problems.[28]

Experimentation

While reflection can play an important role in testing or evaluating hypotheses, practical experimentation must also figure prominently in the process of inquiry. To understand our world, Dewey argues, we must sometimes act upon it, drawing lessons from the results. Echoing Dewey's argument, Eisner writes, "[w]e need ... an attitude in schools that expects that experimentation in educational practices is a normal part of doing educational business."[29] For teachers who are often encumbered by bureaucratic limitations or the more subtle force of organizational "regularities,"

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26 John Dewey. *Experience and Nature* John Dewey: The Later Works, 1925-1953, Volume 1: 1925 Edited by Jo Ann Boydston. Carbondale Illinois: Southern Illinois University Press, 1981. p. 13.

27 Richard Bernstein. *John Dewey* New York: Washington Square Press, inc. 1966. p. 93.

28 Dewey. *Freedom and Culture* p. 166.

29 Eisner, "The Art and Craft of Teaching" p. 13.

experimentation requires the courage to try something new.[30] On the other hand, students, particularly the youngest within our schools, often are naturally drawn to discovery exercises. "Children" Dewey observes, "like to do things and watch to see what will happen."[31] In this volume, Atkin and Raizen similarly speak of the "intrinsic appeal" of instruction which allows student to "figure out what happens."

The value of experimentation implies a way of looking at problems as well as a way to address them. Dewey speaks of an experimental logic, closely aligned with the reflective attitude, which rejects the unquestioned acceptance of existing routines or rules. "An experimental logic is opposed to an absolutist one which has pre-set ends." This implies that:

> the politics and proposals for social action be treated as working hypotheses, not as programs to be rigidly adhered to and executed. They will be experimental in the sense that they will be entertained subject to constant and well-equipped observation of the consequences they entail when acted upon, and subject to ready and flexible revision in the light of observed consequences....No longer will views generated in view of special situations be frozen into absolute standards and masquerade as eternal truths.[32]

In The School and Society, Dewey offers an example of the importance of promoting the experimental logic within classrooms. One of the Laboratory School's teachers creates a lesson on the bio-chemical properties of various foods. She asks the children to boil eggs for different lengths of time to discover when the white of the egg is transformed. The students at first believe that their task can be accomplished by following a recipe in a cookbook. But, as Dewey points out, this approach to the problem is misguided. "For the child simply to desire to cook an egg, and accordingly drop it in water for three minutes, and take it out when he is told, is not educative." The teacher thus leads the children to see that only through experimentation will they truly understand what they are doing.[33]

Deweyan Values and Poor and Minority Children

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30 I take this term from Sarason. *The Culture of School and the Problem of Change*

31 Dewey. *School and Society* p. 44

32 Dewey *Public and Its Problems* p. 362.

33 Dewey. *School and Society* p. 40

The connection between Dewey's humanism and his faith in democracy which we point to above, suggests that his understanding of schooling should apply to all students and teachers, not simply some special class. But while all children and adults would benefit from schools which promote greater understanding and the ability to positively influence one's environment, such schools are particularly well suited to meet the needs of poor and minority children and their communities. Because it focuses on the possible, on what children or teachers can do, the humanistic understanding of schooling confronts and redresses the broader culture's frequently negative images of inner-city or poor rural communities. In addition, poor and minority students and their parents can draw on participation, communication, reflection, and experimentation as tools for understanding and addressing the challenges within their local communities. Dewey believes that ownership of these values "liberates individuals; it enables them to see new problems, devise new procedures, and, in general, makes for diversification rather than for set uniformity."[34]

III. CHANGING SCHOOL CULTURE

The promise of the vision of schooling outlined above raises the question of how such an understanding can be developed in schools. Clearly such a transformation suggests systemic change in school culture and practice.[35] Most school change initiatives follow the research, development, and dissemination model—what some commentators term RD&D.[36] In this model, outside researchers identify some problem with schools and create a programmatic response which they bring into the schools. Pitting researchers against the school community," this approach "suggests that knowledge comes from experts and is to be handed to practitioners."[37] The schools become "passive targets" for isolated innovations.[38] This traditional model of change falls short of our needs on three accounts. First, the RD&D model seeks to

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[34] Dewey. *Sources of a Science of Education* p. 4.

[35] Larry Cuban refers to such fundamental change as second order . See generally: Cuban. "A Fundamental Puzzle of School Reform"

[36] See for example: Paul Heckman, Jeannie Oakes, & Kenneth Sirotnik. "Expanding the Concepts of School Renewal and Change" *Educational Leadership* v40 n7 1983. pp. 26-32.

[37] Kenneth Sirotnik and Richard Clark. "School-Centered Decision Making and Renewal" *Phi Delta Kappan* v69 n9 1988. p. 661.

[38] Heckman, Oakes, & Sirotnik. "Expanding the Concepts of School Renewal and Change" p. 29.

change practices without directly influencing the underlying school culture. As we noted in our introduction, this disregard for school culture helps explain the constancy of fundamental practices in the face of unremitting reform. Second, the RD&D model does not sufficiently account for the unique needs of different schools or the same schools at different times. Berman and McLaughlin highlight this problem in their classic study of educational change.

> Despite considerable innovative activity on the part of local school districts, the evidence suggests that: No class of existing educational treatments has been found that consistently leads to improved student outcomes ... [S]uccessful projects have difficulty sustaining their success over a number of years ...[they] are not disseminated automatically or easily, and their "replication" in new sites usually falls short of their performance in the original sites.[39]

Finally, and perhaps most importantly for our purposes, by imposing a model of change from the outside, the RD&D model undermines the core values of a humanistic school culture—participation, communication/community, reflection, and experimentation.

These problems with the RD&D model point to an alternative approach to school change which attends to school culture as well as practice and considers the particular characteristics of individual schools. Such an alternative approach draws upon the core humanistic values to suggest three guiding principles for the change project. The value of participation implies that change initiatives should be based at the local school and conducted by members of the local school community. Teachers and parents should be involved in all facets of the change project. The values of communication/community and reflection recommend that critical discourse within and about the schools should be the focus of change efforts. Schools need to become centers for what Maxine Greene refers to as "space[s] of dialogue and possibility."[40] The dialogue should consider school goals and practices in light of the unique needs of the school community. Finally, the value of experimentation suggests that in addition to being reflective and far-ranging, dialogue should also be tied to practical experiments at the school site.

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[39] Quoted from: Kenneth Sirotnik and Richard Clark. "School-Centered Decision Making and Renewal" *Phi Delta Kappan* v69 n9 1988. p. 661.

[40] Maxine Greene, *The Dialectice of Freedom* New York: Teachers College Press, 1988. p. xi.

Over the last few years, a number of University sponsored programs have been initiated in schools which incorporate participation, communication, reflection, and experimentation. Most of these programs fall into one of two categories: collaborative research or collaborative dialogue.[41] In collaborative research, university researchers work with a small group of teachers within one school or a network of schools on specific issues of common concern. While more open-ended than the RD&D approach, collaborative research follows a relatively structured process and focuses on particular ends. Collaborative dialogue, on the other hand, engages a group of teachers or a whole school's faculty in open-ended discussion about the general process of schooling. Discussions may center around a set of readings or whatever issues are of immediate concern to the participants. Unlike collaborative research, this process does not seek to redress any particular problem or need. The focus of collaborative dialogue is on "the disposition of teachers and others in the school regarding processes and concepts of change, rather than on changing specific structures or behaviors."[42]

In the Accelerated School Project we have developed our own model of change—the Inquiry Process—which incorporates features of collaborative research and collaborative dialogue and applies them to the particular needs of schools serving poor and minority children. Like collaborative research, our Inquiry Process features a structured approach and has clearly defined goals. Like collaborative dialogue, our Inquiry Process explores a wide range of issues which touch upon all facets of the school, on school culture as well as pedagogical practices.[43] Our process can be summarized in six stages: 1) Creating a school-based commitment to a shared vision of what the school

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[41] For a review of collaborative inquiry, see William Tikunoff and John Mergendoller. "Inquiry as a Means to Professional Growth: The Teacher as Researcher" pp. 210-227. For examples of collaborative dialogue see: Heckman, Oakes, and Sirotnik. "Expanding the Concepts of School Renewal and Change" and Gibboney & Gould. "Staff Development and Educational Renewal Through Dialogue in Two School Systems: A Conceptual and Empirical Assessment"

[42] Heckman, Oakes, & Sirotnik. "Expanding the Concepts of School Renewal and Change" p. 29.

[43] Kenneth Sirotnik and Jeannie Oakes similarly offer a model for collaborative inquiry which integrates collaborative research and collaborative dialogue. See: "Critical Inquiry for School Renewal: Liberating Theory and Practice" in *Critical Perspecitives on the Organization and Improvement of Schooling* Kenneth Sirotnik and Jeannie Oakes editors. Boston: Kluwer-Nijhoff Publishing, 1986. While there is a great deal of similarity between their model of school improvement and our Inquiry Process, there are two important differences. First, Sirotnik and Oakes build upon Habermas and critical theory rather than Dewey and pragmatism. Second, whereas Sirotnik and Oakes are concerned with school renewal generally, our process focuses on changing schools which serve poor and minority children.

should look like; 2) Structuring the school to inquire into the relationship between present conditions and the school's vision; 3) Examining existing conditions within the school in light of the organizing questions or problematics developed in stage two; 4) Exploring programs or models in other schools or in the literature related to the problematic; 5) Synthesizing ideas into action plans and developing pilot or experimental programs.; 6) Evaluating the programs which have been implemented to reassess how best to move the school towards its collective vision.

We advocate such a relatively structured process because we believe that an open ended process would not provide a significantly strong counterbalance to the power of deeply entrenched regularities and meanings found in most inner-city and poor rural schools. Our concern is that teachers conditioned to react to change initiatives in predictable ways respond to open-ended discussion as if it is a form of the RD&D model, and hence seek out immediate answers for immediate and isolated problems. Besides avoiding the more fundamental issues, this approach to change does little to transform the attitudes of those within the school. Employing a structure which roughly parallels the stages of scientific inquiry provides a discipline of sorts to the participants. It encourages teachers to step outside of practice as they know it and explore alternatives. As Dewey notes, individuals often begin to develop the reflective attitude or the experimental logic through engagement in a process of inquiry. We believe that an ongoing collaboration between a University team and members of the school community furthers the development of these attitudes. John Goodlad makes a similar observation in a study of School-University partnerships.

> The production of knowledge and the weighing of knowledge in making decisions are not natural activities in schools. The joining of universities with schools, as in partnerships, enhances the chances of such activities influencing the workplace without distorting the natural bent of both institutions.[44]

Over the past three years, the Inquiry Process has served as the centerpiece of change efforts within the Accelerated Schools Project. During that time, a team of Stanford professors and graduate students have worked

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[44] John Goodlad. "Toward a Health Ecosystem" in *The Ecology of School Renewal* John Goodlad editor. Chicago: University of Chicago Press, pp. 218-9.

closely with two pilot elementary schools in the Bay Area as well as a number of other satellite schools around the nation.[45] To provide a richer description of this work and enable us to comment more fully upon the Inquiry Process, we turn now to an extended description of the model in action. This description draws upon our experiences in both our pilot and our satellite schools. While, the model we lay out is a synthesis of our various collaborative efforts, our description focuses primarily upon one group of teachers at Hoover Elementary School in Redwood City, California in order to enhance the clarity of our presentation.

IV. THE INQUIRY PROCESS

Stage One: Forging a School-Based Commitment to Change

In our earlier discussion of communication, we pointed out that for a community of inquirers to emerge, there must first exist shared understandings and a common purpose. The first stage of the Inquiry Process seeks to develop these prerequisites for inquiry in three steps: initial discussions, determination of school commitment, and creation of a vision.

Initial Discussions

The Brazilian educator Paulo Freire speaks of the importance of a "tuning in" phase in which outside collaborators meet with the people who may become involved in a change project to in order to focus attention on the need for change and develop common understandings, trust, and rapport. Accordingly, the Stanford team first met with members of the Hoover faculty informally in small group settings in which we outlined the goals of the project in broad strokes and discussed what the teachers should expect from their involvement in the project. Through this process both sides of the potential partnership shared their beliefs about schooling and school change.

These first meetings culminated in a staff development day dedicated to the Accelerated Schools Project, which was attended by the school's faculty and principal, along with representatives from the district office, Board of Education, and the community. The agenda for this event was structured around three goals. First, we hoped to place the challenges faced by this

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[45] Levin in "Accelerated Schools After Three Years" (forthcoming in *Educational Leadership*) summarizes the different Accelerated Schools programs now in existence. To date state-wide networks in Missouri and Illinois include over thirty Accelerated Schools.

school within the context of a broader need for change across the educational system. Drawing on the statistics outlined in *Educational Reform for Disadvantaged Students: An Emerging Crisis* [46], we presented the teachers with information about the conditions of at-risk children in the nation at-large, pointing to the growing number of at-risk children, their growing degree of disadvantagement, and the inability of schools as presently structured to meet these expanding needs. We then asked for representative members of the school community—an Assistant Superintendent, a principal, a teacher, and a parent—to report on the conditions of at-risk children from the vantage point of the district, the school, the classroom, or the community. An ensuing discussion on these reports resulted in the conclusion that the school faced increasing challenges. This conclusion led the Stanford team to pursue a second goal for the day—articulating our belief that schools can craft responses to these challenges only if they undertake fundamental changes within their culture and practices. We presented a humanistic understanding of schooling and the broad "accelerated" vision of a school implied by this understanding. Finally, seeking to reaffirm the potential for positive change which lay within the Hoover school community, we asked all those present to share examples of Accelerated schooling practices which presently exist at Hoover and then to consider other practices which they might wish to adopt.

Committing to the Project

At the conclusion of the introductory staff development day, we asked the members of the school's faculty to determine whether they would be interested in becoming involved in our project as a pilot school. We suggested that this decision should be made by those on the school site with full understanding of the commitment of the Accelerated School Project staff and the school district administration. The Stanford team promised a six year commitment to a collaborative relationship. Hoover's principal and faculty became confident of the district's commitment to a school-based change project through a series of discussions with the district Superintendent and Assistant Superintendent, as well as members of the Board of Education. With support thus insured, Hoover's faculty then gathered to discuss their own commitment. After a few

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[46] Henry Levin. *Educational Reform for Disadvantaged Students: An Emerging Crisis* West Haven, Connecticut: National Educational Association's Professional Library.. 1986.

sessions of far-ranging discussions, the faculty unanimously decided to become a pilot Accelerated School.

Creating a Vision

Once committed to renewal, Hoover's school community then worked with the Stanford team to develop a set of shared goals. In a second staff development day, Hoover's teachers and principal gathered along with representatives from the District office, the School Board, and the community to discuss the broad purposes of schooling. The Stanford team initiated the dialogue with the following question: "What would you like today's kindergarten student to look like when he or she leaves the school in six years?" The responses to this first question formed the basis for discussing what the school *should* look like. Beginning the dialogue by considering goals for an individual child serves (at least) four purposes. First, it focuses the discussion on the needs of the child, something too often ignored within educational discourse. Second, it encourages those present to consider the possible, thereby promoting higher expectations for the school. Third, because the question centers attention on the child rather than existing school programs, it leads the school community to look beyond the "regularities" which structure the present reality of schooling. Fourth, because it touches upon deeply held beliefs, it leads those present to articulate value judgments which are normally silent.

It should come as no surprise that the responses to the above question led to a lively discussion about the school's vision. While a great many differences arose through the course of the dialogue, we took care not to force individuals to arrive at agreement prematurely. We chose instead to promote further dialogue, following Dewey's contention that "consensus demands communication."[47] We encouraged the participants to see commonalities, pointing to the importance of creating a common document which would hold meaning for them as a group. By the end of the day, the group produced a school vision which reflected the unique needs and strengths of the school as well as the collective beliefs of the school community.

Stage Two: Creating Structures for Inquiry

Common language and shared purposes are necessary but not sufficient conditions for effective inquiry within school communities. Members of a school community also need experience in problem-solving within groups,

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[47] Dewey. *Democracy and Education* p. 8.

organizational structures which will provide time and resources for inquiry, and the central questions or issues which drive the inquiry.

Group Process Exercises

Substantive pedagogical discussions are rarely found in most schools. Teachers, isolated from one another by self-contained classrooms and restrictive scheduling, confer with one another "on the run." Because members of school communities generally are provided with little opportunity to work together as professionals, they lack experience in addressing problems within a group setting. To redress this need, the Stanford team established a three day workshop for the Hoover school community on working in groups. During this workshop, teachers, administrators, and community representatives participated in simulated problem-solving exercises within small group settings.[48] These exercises drew upon the skills teachers bring from their work with students—agenda setting, active listening, facilitating discussions—to suggest models for interaction amongst a group of professionals. In addition, the exercises promoted a set of values which are essential to group inquiry—the importance of participation, openness to other view points, and willingness to take risks. This workshop played an important role in overcoming what other researchers have referred to as a "culture of silence," an initial unwillingness on the part of some participants to openly discuss their concerns and interests in a public setting.[49]

Structuring for Group Work

As we turned to the task of establishing a format for the inquiry process to follow, the question of size became paramount. What, we wondered, is the optimal size for a group of individuals participating in collaborative inquiry? While we came up with no hard and fast rules, we concluded that smaller, focused groups are preferable to one group composed of the school as a whole. In groups of six to ten members, everyone's full participation is essential to the productivity of the whole group and there is sufficient opportunity for all relevant voices to be heard. Additionally, having multiple smaller groups

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[48] Sirotnik and Oakes suggest another approach to developing the art of communictation. They video-taped initial group sessions and used them as discussion pieces for other groups to critique and learn from. Sirotnik and Oakes, Critical Inquiry for School Renewal: Liberating Theory and Practice" p. 72.

[49] Ibid. p. 67.

means that progress can be made on multiple issues simultaneously. Given this rationale, the Stanford team helped the Hoover school community to split the vision into four or five relatively discrete themes. Each of these pieces of the vision became the text for inquiry groups or "cadres." At Hoover, these themes ranged from the need for critical thinking skills, to the importance of enriching the school's curriculum offerings. Teachers, administrators, and interested parents, were then asked to choose which one of these themes they wished to work on.[50] At least one member of the Stanford team was assigned to each cadre to serve as a facilitator of the process. To provide the cadres with working time, the Hoover's principal, with the support of the district administration and the school's faculty, replaced the school's scheduled bi-monthly faculty meetings with cadre meetings. In addition, four staff development days over the course of the school year were set aside for other activities related to the Inquiry Process.

The cadre plan suggests a decentralized approach to school renewal. Not only are decisions made on the school site, but within small groups at that site. Such a model demands coordination between the different groups and between the different levels of the organizational structure—district, school, cadre. To meet this need, we created a steering committee composed of representatives from the district office, the Board of Education, the community, the school administration, the teachers, and the Stanford team. The steering committee convened monthly to hear reports on the cadre's work, review the status of ongoing programs, and provide guidance on questions which affected the program as a whole.

Directing the Inquiry—the Problematic

Dewey believes that inquiry involves more than "randomly grop[ing]" for ways to achieve our goals. We need to have a "sense of what is relevant and irrelevant" to our concerns. We gain this sense , Dewey argued, when "we are aware that something is wrong, troublesome, or conflicting[.]"[51] In order to advance their aviation experiments, Wilbur and Orville Wright thus needed to move beyond the mere vision of an aircraft driven by a machine. They needed to consider some specific problem, such as how to develop adequate lift—which could focus their experimental efforts. Likewise, the first task facing

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[50] Parents worked on a parental involvement cadre due to their special interest and unique vantage point.

[51] Bernstein. *John Dewey* p. 104.

cadres is to transform their piece of the vision into a problematic—an organizing question which can direct the group's efforts throughout the inquiry. To move groups in this direction, facilitators encourage group members to discuss the relationship between their piece of the vision and the present reality within the school. For example, the "problem solving" cadre began with the following text from the school's vision: "Our students will acquire the problem solving and critical thinking skills which will enable them to participate successfully as citizens and workers in the 21st Century."[52] Initial discussions revealed that group members were particularly concerned with these "higher order" skills in the area of mathematics. Students in the upper grades frequently experienced difficulty with word problems or other problem solving exercises in math. Standardized tests showed that Hoover's students had increasing difficulty with these types of questions even though they scored relatively high on tests of math computation. These initial discussions crystallized the teachers' sense of something troubling. They led to the development of the following problematic: "Why does the discrepancy between math computation scores and math application scores grow between second and sixth grades?"

In leading groups to move from a statement of goals to the creation of a problematic, the facilitator encourages the group to avoid "the premature and uninformed definition of a specific problem that assumes an answer."[53] That is, it would be innappropriate for the group in the above example to narrow their inquiry by asking at the onset which problem solving curriculum the school should adopt. Such a question prevents the inquiry process from getting at the underlying causes of problems. It narrows the scope of the questions which will be asked and hence limits the potential understanding that inquiry may develop. As Dewey argues, "[p]reoccupation with attaining some direct end or practical utility, always limits scientific inquiry...[and] restricts the field of attention and thought[.]"[54]

Stage Three: Looking Inwards

School people commonly look outside of their experience for answers to the challenges they face. A teacher finds his student's behavior disruptive; he

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[52] Hoover School Vision created June 8, 1987 in Redwood City, California.
[53] Gibboney and Gould "Staff Development and Educational Renewal Through Dialogue in Two School Systems: A Conceptual and Empirical Assessment" p. 38.
[54] Dewey. *Sources of A Science of Education* p. 8.

implements Lee Kantor's model of Assertive Discipline. A principal believes that her teachers' lessons are poorly organized; she brings an expert in the Madelaine Hunter method to provide a workshop for her staff. In leaping to accept external solutions, teachers and administrators forsake the opportunity to gain a much richer understanding of their own world which would enable them to craft responses far more appropriate to the challenges which they face. But reading one's own world implies going beyond what is immediately present. For a cadre to learn about a problematic from experiences within the school, it needs to reflect on these experiences critically. This process of reflective self-examination entails four steps: developing hypotheses, gathering data, interpreting the data, and reporting to the school community.

Developing Hypotheses

Once a cadre has developed a problematic, it generates a set of responses which seek to explain the trouble or conflict or curiosity. The facilitator encourages the group to consider any and all possible explanations. In the "problem solving" cadre the group's members offered a wide range of reasons for the students' difficulty with problem solving exercises in math. Some explanations focused on the teachers. Perhaps, the group hypothesized, the teachers at the lower grades placed a greater emphasis on this area or were more highly trained in math instruction. Alternatively, the group wondered whether students naturally become less interested in math as they grow older or whether older students are more generally less interested in school. The cadre also considered the possibility that the difficulties with problem solving exercises are somehow related to the students' background. Could it be, they wondered, that children who are native-Spanish speakers encounter difficulty reading word problems? Throughout this process, the facilitator sought to reinforce the notion that the cadre should not expect to discover any one "correct" explanation; a number of complementary explanations might inform the problematic.

Data Gathering

Having developed a list of hypotheses, cadres then discuss how they might examine existing school practices to shed light on these explanations. This data gathering is more exploratory than confirmatory; the hypotheses suggest fruitful areas for consideration, they do not imply the need to

systematically test the relationship between two constructs.[55] The "problem solving" cadre employed a variety of data gathering techniques during this phase of the inquiry. Teachers from the cadre first observed one another during mathematics instruction, then observed the classrooms of other teachers in the school. The cadre also developed an interview form, for questioning their colleagues about math curriculum and instruction. Items touched on common challenges teachers face, use of manipulatives, an evaluation of textbook quality. In addition, the cadre conducted a survey of mathematics-related resources (manipulatives, games, computer programs, textbooks, curricula) available in the school.

Interpreting the Data

Gathering data prepares the way for the pivotal task of interpretation. As Kenneth Sirotnik aptly points out: "The world of schooling is a veritable mine of data or information. ...Whether the minerals are precious, however, depends on issues raised subsequently."[56] Data first appears as isolated statements of conditions, or behaviors, or beliefs; these all need to be connected in meaningful ways. The Stanford facilitators thus encouraged the cadres to begin this stage by looking for patterns in the data. The "problem solving" cadre noted a marked difference between the instructional approaches used for the primary grades and those used for the upper grades. In the primary grades, math instruction tended to be more child-centered, featuring hands-on exercises in small groups. Teachers made extensive use of manipulatives and math games in these lessons. In the upper grades, on the other hand, teachers tended to use the math textbook for whole group instruction. The cadre also observed that students in the upper grades often saw little connection between the "real world" math problems which they encountered at home and the word problems included in the math text books. Many students who were able to use their own methods to figure out the math which they needed at the local store or in their after-school games were lost when they were asked to use the problem solving formulas taught in the school.

After the cadre identified these patterns, the facilitator asked its members to consider the relationship between these patterns and commonly held

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55 I take this distinction from Sirotnik and Oakes in Critical Inquiry for School Renewal: Liberating Theory and Practice"

56 Kenneth Sirotnik. "Evaluation in the Ecology of Schooling: The Process of School Renewal" in *The Ecolgy of School Renewal*, p. 54.

assumptions about the school or the student's homes. This discussion revealed teachers' assumptions about child development as well as perceptions of pressures to keep up with the standardized curriculum. They observed that these assumptions were buttressed by institutional supports and regularities: primary teachers were given manipulatives and received training in hands-on instruction while the upper grade teachers were issued textbooks and expected to prepare students for the curriculum in the next grade. The cadre also concluded that the students' inability to connect math in school and in the real world points to the more general dissonance between the school and home life. The cadre questioned why alternative approaches to problem solving promoted in the home are not accorded more respect in the school.

Cadre Reports

The conclusions from the cadre's data gathering and interpretation form the basis of a report which each cadre prepares for the rest of the school community. These reports describe some feature of the school's program, explain why the school presently functions in this way, and then point, in very general terms, to possible directions for change. The "problem solving cadre suggested further inquiry into how institutional supports and norms might be changed to promote, rather than inhibit, the development of more child-centered approaches to mathematics instruction at the upper grades. It also recommended that the group examine how the school could better integrate "school math" with the real world math of the students' home lives. This cadre shared its report along with the rest of the cadres, at a school-wide staff development day which was set aside for the Accelerated Schools Project. The school as a whole provided feedback on the individual cadres' work, suggesting new areas of concern which were integrated into the reports.

Stage Four: Looking Outwards

While reflection begins with understanding one's own world, it also entails drawing upon the intelligent experience of others. John Goodlad points out that "quiltmakers, boatbuilders, glassblowers, and other craftspersons ...infuse their efforts with the expertise of others engaged in similar work."[57] Teachers similarly need to learn from one another's efforts. During this fourth stage, facilitators encourage cadre members to look at models from other

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57 John Goodlad. "School-University Partnerships for Educational Renewal: Rationale and Concepts" In *School University Partnerships in Action* edited by Kenneth Sirotnik and John Goodlad. New York: Teachers College, Press. 1988. p. 10.

schools in considering their own needs for change. Cadres read pertinent literature, listen to speakers, and visit other schools. Throughout these explorations, facilitators ask cadre members to think of themselves as craftspeople interested in gaining ideas for alternative approaches, not as technicians in search of prefabricated solutions.

During this stage, the "problem solving" cadre began its work by reading a series of articles on the use of hands-on learning in elementary mathematics. Many of the articles described specific instructional programs or manipulative packages. The facilitator emphasized the importance of reading these articles for general understanding rather than hard and fast rules for practice. As Dewey argues, "laws and facts, even when they are arrived at in genuinely scientific shape, do not yield *rules of practice*. Their value for educational practice...is indirect; it consists in provision of *intellectual instrumentalities* to be used by the educator."[58] After reading these articles, cadre members discussed the relative merits of different instructional approaches. They commented on the relationship between specific approaches and underlying beliefs about schooling. In addition, the cadre members discussed the challenges of transforming present attitudes and practices.

To learn more about ways to address the dissonance between the home and the school, the cadre invited a speaker from "Family Math," a program aimed at involving parents in their children's mathematics education. Cadre members found many features of the program consonant with ideas that they had been independently developing. Nevertheless, rather than looking at Family Math as a finished product ready to import whole into the school, cadre members asked how the program might be adapted to the particular needs of Hoover.

At the conclusion of this stage, the cadres developed a second report for the school-wide audience. These reports pointed to conclusions from the literature, strengths and weaknesses of individual programs, and, finally, what lessons the literature and programs hold for the needs of Hoover.

Stage Five: Synthesizing Ideas into Action Plans

Dewey envisions inquiry as embodying a dynamic relationship between action and understanding. We inquire into the culture and practices of the school not just to gain greater understanding, but also so that we may influence

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58 John Dewey. *Sources of a Science of Education* p. 14.

them through our actions. Conversely, we act upon the school in the form of experimentation so that we may understand it better. During this stage, cadres develop action plans aimed both at moving the school towards its vision and at informing the on-going inquiry. The facilitators lead the cadres to draw upon their understanding of both the school's regularities and how these patterns have been addressed elsewhere to arrive at possible plans for change which are sculpted to the school's special needs. These plans are structured as experiments—they begin with a plan for a limited period of operation or a limited number of individuals to be involved. After the cadres generate a long list of possible changes, they begin to discuss the proposals' relative merits. This evaluation is driven by the following criteria: 1) Does the proposed program address the difficulty or need originally identified in the problematic? 2) Would this experiment shed light on the cadre's understanding of the school? 3) Would the effects of this change have an equitable impact upon all members of the school community?
4) Can the school bring about this change at the present time given resource constraints and other practical limitations? When proposals pass these tests, they are reexamined by the cadres to determine how these changes can be brought about. Cadres identify the need for resources, plan program administration, and anticipate ways to gain the support of those who might purposefully or unwittingly block the change. At the end of this stage, cadres present their proposals to the school as a whole. When a proposal receives the support of this body, the steering committee distributes responsibility for its administration.

The "problem solving" cadre considered proposals ranging from creating a school-wide problem of the week to developing a homework hot-line for students. To address the dissonance between the student's perception of "school math" and "real world math," some cadre members suggested adapting the Family Math Program to the needs of Hoover. The Family Math program creates classes in which parents and their children work together on math puzzles or games. The cadre members believed that they could create a similar program featuring games which their students and families would enjoy. For example, they planned to teach a number of games using cards or dice which called upon the students to employ problem solving strategies and arithmetic functions taught in the classroom. At first, the teachers suggested that the Family Math Class serve students from all grades and meet weekly throughout

the year. Some teachers within the cadre objected to the dimensions of the plan, arguing that as an experiment, the program should be both shorter and limited to the younger students. While the cadre as a whole agreed to a pilot class which would run for six weeks, a number of teachers pointed out the importance of including students from the upper grades who were the original focus of the problematic. Once the cadre decided to offer the class to students of all ages, it turned to developing a plan for program administration. The cadre sought out the school's resource teacher who agreed to administer the class from week to week. With her support in hand, the cadre then asked faculty members if they would pledge to teach one class. To finalize the proposal, the cadre estimated the minimal material costs which the program would entail. This proposal met with favorable response from the rest of the school community. At the request of several teachers from other cadres, it was amended to assure that the teachers of the family classes be fluent in English and Spanish, the native language of many of the parents.

Stage Six: Evaluate and Reassess

In this final stage, cadre members attempt to draw upon the lessons of the pilot programs to inform the ongoing process of school renewal. Cadres begin by creating evaluation tools to assess the strengths and weaknesses of the action plans. These informal assessments seek out the opinions of all those affected by programs. Cadres use the results of the program evaluations as a springboard for a discussion about possible modifications of pilot programs. For example, members of the "problem solving" cadre learned from the teachers, parents, and students that the family class in math should consider tying the games students played into their regular math instruction.

In addition to looking backwards at the results of the process thus far, participants in the inquiry process are also asked at this stage to look forwards and consider new directions for the Inquiry Process. Facilitators encourage members of the school community to reexamine and reinterpret the school's vision. At the end of this stage, members of the school community are again asked to choose a piece of the vision which they wish to work on.

V. OUTCOMES OF THE INQUIRY PROCESS: AN INTERIM REPORT

Three years have passed since the Stanford team initiated the Inquiry Process at two pilot Accelerated Schools in the Bay Area. In each of these schools the process has influenced both school practice and underlying

attitudes within the school community. The nature and scope of changes in practice can be seen by highlighting two programs developed within the Inquiry Process. One cadre, intent on engaging parents more fully in the life of the school, focused its inquiry on the question of why parents attend some school sponsored events but not others. They found that many parents are more likely to come to functions at which they can play an active role than events in which parents are simply asked to listen to representatives from the school. After examining a number of models of parental involvement in other schools, this cadre created a "Parent Room" which became a center of parental activity at the school. Parents met in groups to discuss how to help their children with their work, created a sewing cooperative, and developed enrichment classes in cooking for students. The most active parents also helped to arrange a school community fair which featured dishes from the many ethnic and cultural backgrounds found within the school. In another cadre, an initial interest in enriching the cultural experiences of students led to inquiry into why middle class schools frequently offered much more extensive extra-curricular activities than schools in poorer communities. In examining this discrepancy, the cadre members found that in addition to insufficient funds, many poorer neighborhoods lack the support of surrounding community organizations. This cadre looked at a number of successful models of school-community collaboration in after-school programs. They developed the Extended Day Program which brings together teachers from the school as well as parents and representatives of a broad array of community agencies. The curriculum which these various constituencies offer includes photography, Mexican Dancing, and computer instruction. The program which the cadre developed so impressed District administrators and members of the Board of Education who sit on the steering committee, that these officials took it upon themselves to find sources of funding for the project. A grant to underwrite the project as a six-week pilot was eventually secured from a local corporation. The pilot's success has since led to the creation of a year round program.

Changes in practice are, of course, easier to document than changes in attitudes. Social scientists have long pointed to the tenuous nature of ascribing what is unobservable—a set of beliefs—to what is observable—actions. One way around this conundrum is to obtain participant reports which examine beliefs as well as actions. Through self-reports, we have learned that most members of the school community now place more faith in participation,

communication, reflection, and experimentation. More persuasive still are accounts of how members of the school community draw on these values in their response to problems which have arisen outside of the inquiry process. The case of retention policy is particularly enlightening. This incident arose outside of the cadre structure when a principal observed that first grade teachers planned to retain what he considered to be a large number of students. He met with the teachers and together they talked about why this pattern of retention had arisen over the last few years. The group decided it needed more information about the problem and asked the school's resource teacher to review the records of students who had been retained or had been considered for retention over the past three years. From this data, the group began to see patterns of which type of students tended to be retained and which students seemed to benefit from retention. They then consulted articles on the subject as well as a specialist at the district office to learn more about alternatives to retention. The group finally conducted a forum on retention during one of the Accelerated Schools staff development days at which the school forged a new consensus on the use of retention. This incident illustrates how the humanistic understanding of schooling has begun to take hold within the school culture even outside of the formal Inquiry Process. The original concern of the principal and teachers arose from the high expectations which they hold for all children. Their examination of the issue demonstrates their belief in the importance of widespread participation, communication, reflection, and experimentation.

VI. CHALLENGES TO CHANGE

As a project committed to the value of experimentation, we have attempted to draw understanding from the many challenges to change which we have faced. These challenges have come in one of two forms: non-supportive structures and dissonant world views.

Inhibiting Structures: Time and Hierarchy

The Inquiry Process places a considerable strain on what is perhaps the most important resource of educators—time. It takes time to talk, to read, to experiment. Teachers committed to these tasks are frequently forced to make painful choices between spending time on school improvement, lesson preparation, or home life. Most elementary school teachers have almost no

time for work which calls for them to be away from their classrooms. As Robert Schaefer argues:

> Other professions which involve person-to-person relations provide some respite—refreshing moments when the concentration required in projecting an idea, an ideal, or a product can be eased....The teacher is ordinarily too pressed for time to meditate upon his successes or, for that matter, his failures.[59]

The Pilot Accelerated School at Hoover Elementary has responded to this problem by streamlining some of the teachers' previous responsibilities so that they can focus more energy on the Inquiry Process. In addition, the school created a new physical fitness program which provides teachers with a free hour for Accelerated School Project work every other week. While these efforts clearly represent a positive start, they point to the need for more extensive changes in teacher scheduling. For school renewal to work over an extended period of time, schools need to develop flexible scheduling models in which teachers can work at school improvement projects at the same time they meet their responsibilities in the classroom.

Alongside time limitations, schools involved in school-based renewal projects frequently confront district hierarchies which are either indifferent or opposed to their change agendas. District administrators, accustomed to control over school decisions, often do not adequately respond to requests for support of school-level change efforts. In addition, many district offices, concerned with change themselves, send directives to the school site which contradict or confuse school-based plans for change. The Accelerated School Project has responded to this challenge by seeking to involve many layers of the district hierarchy in the Inquiry Process. In Redwood City, for example, district administrators and members of the Board of Education participated in monthly steering committee meetings at Hoover Elementary. Our work with a number of districts has shown that this level of coordination is far easier to achieve in small to mid-sized districts than in large urban districts. This experience has led us to emphasize the importance of obtaining district-wide commitment to participate in coordinating committees before a change project is initiated.

Dissonant World Views

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[59] Schaefer. *The School as a Center of Inquiry* p. 36.

Through our work with pilot schools, we have found that challenges to change lie within people as well as structures. The Inquiry Process approaches change very differently from the RD&D model with which most teachers and administrators are accustomed. The two models of change reflect different world views. In a recent article, Jeanie Oakes, Sharon Hare, and Kenneth Sirotnik outline a number of contrasts between these two views.[60] Inquiry generally emphasizes process over product, thinking over action, exploration over confirmation, long-term over short-term payoffs, responsibility over accountability, and ambiguity over closure. School people who expect change initiatives to be characterized by the latter terms in the above pairs often will be skeptical of the inquiry approach. For example, because teachers are accustomed to the RD&D model they often view the "ideas and processes of thoughtful dialogue, exploration of new ideas, and dialectical reasoning," expressed in the Inquiry Process as "shooting the breeze, jawing, whistling in the wind—talk with no action."[61] Similarly, teachers in our pilot schools at times have wanted to create interventions before they have rigorously examined the existing school program. Stanford facilitators have used these occasions as opportunities for the cadre to critically examine their own beliefs about change. By bringing the different world views out into the open and drawing connections between processes and intended outcomes, these discussions enable facilitators and cadres to move beyond their differences towards common ground.

VII. CONCLUSION

The challenges which we outline above, point to the deeply entrenched practices and beliefs found in most schools today. These underlying structures and meanings of the schools are, of course, inextricably tied to interests and norms which dominate the larger society. Some critics point to this relationship as evidence that fundamental school change will have to wait for broader societal change. Larry Cuban makes this point forcefully: "For those who seek fundamental second order changes that will sweep away current structures and start anew ....*basic social and political changes would need to occur outside of*

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[60] Jeannie Oakes, Sharon Hare, and Kenneth Sirotnik. "Collaborative Inquiry: A Congenial Paradigm in a Cantankerous World" *Teachers College Record* v87 n4 1986. pp. 545-562.
[61] Ibid. p. 556-7.

schools."[62] Such a pessimistic view of school reform presupposes that members of school communities will blindly follow dominant patterns. But schools need not simply reflect the prevaling norms of society. They can become centers of dialogue where basic assumptions are appraised and challenged. By examining existing practices and beliefs, members of school communities can begin to free themselves from deadening routines and limiting ideologies. However, educators and parents can only take these first steps if they are given the space and the time to reflect on their collective mission. As Maxine Greene eloquently argues: "When people cannot name alternatives, imagine a better state of things, share with others a project of change, they are likely to remain anchored or submerged[.]"[63] An inquiry-based model of school renewal which leads teachers, administrators, and parents to work collaboratively towards a vision of better schooling can disengage the anchors holding down the schools and set them on an accelerated course.

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[62] Cuban. "A Fundamental Puzzle of School Reform" p. 344.
[63] Maxine Greene. *The Dialectice of Freedom* p. 9